# Western New Mexico University (WNMU)

Department of Math and Computer Science

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| Name of Course: | Understanding Elementary Math I |
| Course Number/Section: | MATH 2132-72 |
| CRN: | 13828 |
| Semester: | Fall Semester, 2023 |
| Meeting Times: | Fridays: 12:30 pm - 1:30 pm MDT |
| Venue: | Zoom: https://wnmu.zoom.us/j/89080119210 |
| Course website: | https://mathematicseducation.appspot.com/ |
| Instructor's Name: | **Samuel Chukwuemeka B.Eng., A.A.T, M.Ed, M.S** |
| WNMU E-Mail: | samuel.chukwuemeka@wnmu.edu |
| Office Location: | Online |
| Office Hours: | Fridays: 12:30 pm - 1:30 pm MDT |
| Google Voice Phone Number: | (256) 365-7048 (Call or text anytime) |

Personal Quote: "The Joy of a Teacher is the Success of his Students." - Samuel Chukwuemeka

## I. COURSE DESCRIPTION:

Presents topics in mathematical reasoning and problem solving; numeration systems; numbers; arithmetic operations on numbers; number theory; fractions, decimals and percents; and proportional reasoning. Prerequisite: Satisfaction of the University's proficiency requirements for mathematics. Credit Hours: 3

### General Course Purpose

This is the first of two courses that focus on developing the mathematical understanding of students who are preparing to be licensed as Elementary Teachers.

### Course Prerequisites/Corequisites

Prerequisite: Satisfaction of the University's proficiency requirements for mathematics

## II. COURSE INSTRUCTIONAL OBJECTIVES:

Upon the successful completion of this course, the student should be able to do these measurable objectives for each topic.

❖ **Problem Solving**

- Explain the four-step problem solving process.
- Solve problems using problem-solving strategies.
- Apply deductive reasoning in arguments.
- Apply inductive reasoning in arguments.
- Determine patterns in objects as applicable.
- Determine the nth term of certain sequences.

❖ **Numbers and Numeration Systems**

- Discuss the origin of numbers.
- Classify numbers.
- Define the different types of numbers.
- Discuss the different numeration systems including the Hindu-Arabic system.
- Order numbers.
- Perform basic arithmetic operations (addition, subtraction, multiplication, and division) on numbers.
- Discuss the inverse relationship between addition and subtraction.
- Discuss the inverse relationship between multiplication and division.
- Explain the models used to develop the algorithms for addition and subtraction.
- Explain the models used to develop the algorithms for multiplication and division.
- Discuss number bases.
- Solve applied problems on numbers.

❖ **Number Theory**

- Discuss the concepts of: Divisibility, Factors, and Multiples.
- State the divisibility tests for 2, 3, 4, 5, 6, 8, 9, 10, and 11.
- State the Fundamental Theorem of Arithmetic.
- Determine the Greatest Common Divisor (GCD) and the Least Common Multiple (LCM) of two or more whole numbers using several methods.
- Factorize whole numbers.
- Discuss the Euclidean Algorithm as regards the greatest common divisor.
- Solve applied problems involving GCD and LCM.

❖ **Integers**

- Represent integers on a number line.
- Explain models for the arithmetic operations on integers.
- Perform basic arithmetic operations (addition, subtraction, multiplication, and division) on integers.
- Discuss the properties of the arithmetic operations on integers.
- Discuss the Division Algorithm.
- Perform the order of operations on integers.

❖ **Rational Numbers and Proportional Reasoning**

- State the different representations for rational numbers.
- Order rational numbers.
- Perform basic arithmetic operations (addition, subtraction, multiplication, and division) on rational numbers.
- Discuss the properties of the arithmetic operations on rational numbers.
- Extend the discussion of Exponents to include negative integers.
- Compare ratios and rational numbers.
- Discuss the concept of Proportions and their properties.
- Discuss the concept of Scaling..

❖ **Rational Numbers as Decimals and Percent**

- Discuss the topic of Decimals.
- Discuss the topic of Fractions.
- Discuss the topic of Percent.
- Develop efficient algorithms for decimal operations using concrete models, drawings, and strategies.
- Write exponential and scientific notation for decimals.
- Convert between fractions, decimals, and percents (fraction to decimal, decimal to fraction, fraction to percent, percent to fraction, decimal to percent, percent to decimal).
- Solve percent problems using proportional relationships.
- Solve applied problems on fractions, decimals, and percents.

## III. INSTRUCTIONAL MATERIALS AND TECHNOLOGY:

A. REQUIRED

**(1.)** MyLab Math (MLM) Access for the online assignments (has the eBook). The eBook has notes, videos, audiovisual resources and several learning aids. This is required. Please log into the Canvas course and complete the registration for MLM. Then, click the **MyLab and Mastering** link on the Left Hand Side (LHS) and follow the links/directions to access the assignments.

**(2.)** Course website is required.

**(3.)** Pens and Pencils and Standard/Simple/Basic Calculator. The use of any other calculator requires my approval. These are required.

**(4.)** Access to a Personal Computer or Mackintosh (not tablet, not smartphone) with internet and email capabilities, and updated internet browsers are required. You may use the computers in the School Computer Labs., School Library, or the Public Library.

B. RECOMMENDED

(1.) Graph Book, Ruler, other writing materials as applicable.

(2.) The audiovisual resources and learning aids in the MLM Access.

(3.) Other resources that may be provided by the instructor.

C. NOT REQUIRED:

The hard copy of the textbook: Problem Solving Approach to Mathematics for Elementary School Teachers, A, 13th edition; ©2020:
Rick Billstein | Shlomo Libeskind | Johnny Lott | Barbara Boschmans:
Pearson: ISBN-13: 9780135183885 (The hard copy of the textbook is not required).

## IV. EVALUATION AND REQUIREMENTS:

A. **Grade Determination**: Student evaluation will be based on performance on the following assessments:

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|---|---|
| MyLab Math (MLM) Assignments | = 60% |
| 15 Discussion Board (DB) assessments @ 2% each | = 30% |
| Project | = 10% |
| ..... | |
| TOTAL | = 100% |

**Method of Grading**: The Weighted Average method is used to compute your grades. Grades will be posted in the Canvas course management system gradebook.

**Grades**: Letter grades are assigned using this scale:

| [90, 100] | [80, 90) | [70, 80) | [60, 70) | [0, 60) |
|---|---|---|---|---|
| A | B | C | D | F |

**Here is an example to calculate the final grade:**

| Assessments | Weight (%) | Your Score (%) | Weighted Score |
|---|---|---|---|
| MLM Assignments | 60 | 90 | 5400 |
| DB 1 | 2 | 95 | 190 |
| DB 2 | 2 | 90 | 180 |
| DB 3 | 2 | 80 | 160 |
| DB 4 | 2 | 85 | 170 |
| DB 5 | 2 | 100 | 200 |
| DB 6 | 2 | 70 | 140 |
| DB 7 | 2 | 75 | 150 |
| DB 8 | 2 | 84 | 168 |
| DB 9 | 2 | 82 | 164 |
| DB 10 | 2 | 93 | 186 |
| DB 11 | 2 | 97 | 194 |
| DB 12 | 2 | 81 | 162 |
| DB 13 | 2 | 88 | 176 |
| DB 14 | 2 | 96 | 192 |
| DB 15 | 2 | 98 | 196 |
| Project | 10 | 100 | 1000 |
| $\Sigma Weight = 100$ | | $\Sigma Weighted\ Score = 9028$ | |

Final Grade $= \frac{Sum\ of\ Weighted\ Scores}{Sum\ of\ Weights} = \frac{9028}{100} = 90.28\% \simeq 90\% = A$

**Please NOTE:**

(1.) The final grade is rounded to the nearest integer only one time.

A grade of 79.5000111% is rounded to an 80% which is a B while a grade of 79.499999 is rounded to a 79% which is a C.

(2.) At least a final grade of 70% (C) is required to pass the course.

(3.) There is no extra credit or bonus point or curving grades for the course.

Please review the Frequently Asked Questions for explanations.

B. **LATE WORK/MAKE UP POLICY:**

**Please review the Tentative Class Schedule and the Pacing Guide for specific dates.**

**MLM Assignments**: All MyLab Math (MLM) assignments are released to you on the first day of class. There are two due dates for each section of the assignment. After the first due date, you may continue to work on the assignment without penalty until the final due date. Grades are updated biweekly in the Canvas gradebook. The final due date is Thursday, 7th December, 2023 (12/07/2023) by 11:59 pm MDT. There is no make-up for any assignment after the final due date.

**Discussions**: There is a Discussion Board (DB) forum activity each week besides the week of Thanksgiving holiday. The initial post is due on Thursday. At least one (one or more) response to an initial post of a different colleague is due on Saturday. There is no make-up for any missed DB activity. Please review the DB Requirements and DB Samples in the Canvas course and the course website. If you miss a DB assessment for any week, you may continue the discussion after the DB is graded. However, no credit is earned.

**Project**: You are strongly encouraged to submit a draft for the project. Review and do the corrections based on my feedback before the main submission. The project draft is initially due on Saturday, 14th October, 2023 (10/14/2023) by 11.59 pm MDT and finally due on Saturday, 25th November, 2023 (11/25/2023) by 11:59 pm MDT.

The project is initially due on Saturday, 21st October , 2023 (10/21/2023) by 11:59 pm

MDT. Projects will be accepted up until the last day of class: Thursday, 7th December, 2023 (12/07/2023) by 11:59 pm MDT. After that date, no project will be accepted.

## V. CLASS ATTENDANCE AND PARTICIPATION POLICY:

The weekly Office Hours/Live Sessions are recommended, but not required. Please note that the sessions are recorded. If the day and time does not suit your schedule, please send an email to me with your available days and times. I shall check my schedule and respond. You are encouraged to solve at least 20 questions of your MLM assignments daily. This will enable you to complete all work ahead of the due date. Participation in discussions is also very important. Further, you are encouraged to submit drafts for your project and make any corrections based on my feedback.

## VI. COURSE ETIQUETTE:

It is my responsibility to promote a safe and conducive learning environment. It is my assumption that you know what is right and what is wrong. In that regard, I ask that you behave accordingly and be respectful at all times.

Students are expected to uphold the core values of academic integrity which include honesty, trust, fairness, respect and responsibility. These core values, combined with finding one's purpose and passion and applying them in and out of classroom learning, produce students who become extraordinary citizens.

## VII. ACADEMIC INTEGRITY POLICY:

As a WNMU student, it is your responsibility to be informed about what constitutes academic misconduct, how to avoid it and what happens if you decide to engage in it.

Examples of academic misconduct include (but are not limited to):

- plagiarism (turning in work of another person and not giving them credit)
- stealing an exam or course materials
- copying another student's homework, paper, exam
- cheating on an exam (copying from another student, etc.)
- falsifying academic documents

Violations of academic misconduct may result in a failing grade in the assessment, a failing grade in the course, and/or a report to the college administration among others. Please review pages 59 - 61 of Student Handbook: https://admin.wnmu.edu/handbooks/student-handbook/

VIII. **INCLEMENT WEATHER POLICY:**

The course is online. Hence, there are no physical meeting times besides the Office Hours/Live Sessions in Zoom (attendance is recommended but not required). Be it as it may, if you are affected by inclement weather that may affect your completion of the course, please stay safe, then inform me as soon as you can.

IX. **INSTRUCTOR WITHDRAWAL FOR NON-ATTENDANCE:**

Based on Page 119 of the Student Handbook:

https://admin.wnmu.edu/handbooks/student-handbook/

An instructor may withdraw a student from the class rolls, with a grade of "W" for nonattendance, from 6.25 % of the class through 68.75 % of the class. Example: for a 16 week class, after the first week of the semester through the 11th week. Non-attendance in class does not necessarily result in an instructor initiated withdrawal.

The Office of Financial Aid is required by the Department of Education to recalculate federal financial aid eligibility for students who withdraw prior to completing 60% of the semester.

Students are responsible for tuition and fees associated with the course(s).

Personally: I do not withdraw students from my courses. It is up to you if you wish to withdraw. You shall receive the grade you earned. Please review the Student Handbook accordingly.

X. **POLICIES FOR INCOMPLETES AND WITHDRAWALS:**

Please review the Student Handbook accordingly.

Also, please review the Frequently Asked Questions.

Typically, I do not assign Incompletes.

However, there are three conditions where I may consider assigning an Incomplete:

(a.) The student requests an Incomplete due to extenuating circumstances.

(b.) The student requesting the Incomplete should have made significant progress before the extenuating circumstance.

(c.) The extenuating circumstance occurred during the last week of class.

XI. **COURSE SCHEDULE AND SEQUENCE OF INSTRUCTION:**

**Method of Teaching**: Flipped Classroom lecture.

Please review: https://mathematicseducation.appspot.com/#aboutMATH2132

**Math Tutoring**: There are at least 3 tutoring opportunities available to you:

(1.) **Instructor** during Office Hours/Live Sessions: Online

(2.) **TutorMe** link in the Canvas course: the link is on the Left Hand Side (LHS) on the course homepage: 24/7 Online

(3.) **Math Tutors**: https://mathcs.wnmu.edu/resources/tutors/ : Online and Onsite

**Writing**: WNMU Writing Center: https://humanities.wnmu.edu/writingcenter/

## XII. ACCESSIBILITY SERVICES:

**Wellness and Accessibility Services**: Services for students with disabilities are provided through Wellness and Accessibility Services: https://css.wnmu.edu/accessibility/students Services include, but are not limited to; alternate text, assistive technology information, campus housing arrangements, campus accessibility, testing accommodations, advocacy, or assistance with any other campus disability-related needs. (Available to all WNMU students). In order to qualify for these services, documentation must be provided by certified health care professionals. Coordinator of Wellness and Accessibility Services can be contacted by phone (575) 538-6277 or by email at accessibility@wnmu.edu

**Pregnancy**: Western New Mexico University does not discriminate against any student on the basis of pregnancy or related conditions. Absences due to medical conditions relating to pregnancy will be excused for as long as deemed medically necessary by a student's doctor and students will be given the opportunity to make up missed work. Students needing accommodations can seek assistance with accommodations from the Wellness and Student Accessibility Services Coordinator at (575) 538-6277 or for more information visit the Title IX website at https://titleix.wnmu.edu/pregnancy-childbirth/

## XIII. TITLE IX: CONFIDENTIALITY AND MANDATORY REPORTER STATEMENT:

Western New Mexico University faculty are committed to creating a safe learning environment for all members of our community, free from gender and sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX of the Education Amendments of 1972.

Please note that the Title IX: Sex Discrimination and Sexual Harassment Policy designates all faculty members, including teaching assistants, as "Mandatory Reporters." Under WNMU's Title

IX: Sex Discrimination and Sexual Harassment Policy all "Mandatory Reporters" must report all disclosures of sex or gender-based discrimination or violence to WNMU's Title IX Coordinator. The Title IX Coordinator will reach out to provide resources, support, and information after receiving a report, but community members are not required to respond to such outreach. Reported information will remain private.

If you have (or someone you know has) experienced any form of sex or gender-based discrimination or violence and wish to speak with someone confidentially, please contact WNMU's Mental Health Therapist at (575) 538-6888 or visit WNMU's Ombuds website at https://admin.wnmu.edu/ombuds/

For more information regarding WNMU's Title IX procedures, reporting, or support measures, please visit https://titleix.wnmu.edu/

## XIV. UNIVERSITY OFFICIAL COMMUNICATION POLICY:

WNMU policy requires that all **official communication** with the University, other than in-class Canvas communications, be sent via Mustang Express. Emails sent to you by various WNMU departments related to your registration, financial account balance, changes in schedule, etc., will be sent to your **edu** email address. It is very important that you access your Mustang Express email periodically to check for correspondence from the University.

## XV. WNMU CODE OF CIVILITY:

In order to promote a positive, professional atmosphere among students, faculty and staff, the following Code of Civility has been developed:

- **Respect**: Treat all students, faculty, staff and property with respect and in a courteous and professional manner. This includes all communications, whether verbal or written. Let your actions reflect pride in yourself, your university, and your profession.
- **Kindness**: A kind word and gentle voice go a long way. Refrain from using profanity, insulting slang remarks, or making disparaging comments. Consider another person's feelings. Be nice.
- **Truth:** Exhibit honesty and integrity in your dealings with fellow students, faculty and staff members. Don't lie, don't cheat, and don't steal.
- **Responsibility**: Take responsibility for your actions. This includes gracefully accepting the consequences of your behavior.
- **Cooperation**: Exhibit a cooperative manner when dealing with students, faculty and staff

so we may all work towards our common goals and mission.

o **Acceptance**: Accept differences in others, as they accept differences in you. This includes diversity in opinions, beliefs and ideas and everything else that makes us unique individuals.

o **Professionalism**: Always conduct yourself in a manner that will bring pride to your profession, to Western New Mexico University, and, most importantly, to yourself.

## XVI. HELPFUL LINKS AND RESOURCES FOR STUDENTS:

- WNMU Mission, Vision, and Values: https://admin.wnmu.edu/mission/
- WNMU Student Handbook: https://admin.wnmu.edu/handbooks/student-handbook/
- University policies: https://admin.wnmu.edu/policies/
- WNMU Business Office: https://businessaffairs.wnmu.edu/cashier-services/cashiers-office-students/

## XVII. ADDENDUM: IMPORTANT INFORMATION

**Email Policy**: Please use your school email address (…@wnmu.edu) for all communications relating to this course.

**Legal Name**: Please **use only your registered names (First Name and Last Name in the Canvas course)** for **all work done in this course**.

**Rights to change**: I reserve the right to change the information contained in this syllabus with notice. The institution reserves the right to do so, with or without notice.

**Tips to Succeed in the Course:**

Please:

- ❖ Do not procrastinate. Procrastination is inimical to time. Begin your MLM assignments immediately. Complete at least 20 questions daily. MLM has learning aids that you can use right away. Ask questions on any concept you do not understand.

- ❖ Flipped Classroom Learning: Review each topic to be taught in the Course website and in your textbook (eBook), the videos and other multimedia resources in your MLM software prior to attending the Office Hours/Live Sessions. Please ask questions.

- ❖ Participate in the weekly discussions.

- ❖ Submit your project draft well ahead of time and work with me until you have made all necessary revisions based on my feedback before you submit your final project.

- ❖ This course will require a lot of your time. You will do a lot of work. Please be determined to work very hard.
  Review the information: https://mathematicseducation.appspot.com/#aboutMATH2132
  The good thing is that I am here to help you. Please ask questions. I am here to help you.

- ❖ Other information will be provided and/or discussed as applicable.

**Tentative Class Schedule: Fall Semester, 2023**

| Week | Day/Date | eText Sections | Assessments Due |
|---|---|---|---|
| 1 | Monday, 08/14<br>–<br>Saturday, 08/19 | Section 1.1: Mathematics and Problem Solving<br><br>Section 1.2: Explorations with Patterns | (Initial Due)<br>Section 1.1-1st<br>Section 1.1-2nd<br>Section 1.2-1st<br>Section 1.2-2nd<br><br>DB 1 (Due) |
| Friday / August 18 (08/18) | | Last day to Add/Drop/Audit a Course | |
| 2 | Sunday, 08/20<br>–<br>Saturday, 08/26 | Section 3.1: Numeration Systems<br><br>Section 3.2: Addition of Whole Numbers | (Initial Due)<br>Section 3.1-1st<br>Section 3.1-2nd<br>Section 3.2-1st<br><br>DB 2 (Due) |
| 3 | Sunday, 08/27<br>–<br>Saturday, 09/02 | Section 3.2: Addition of Whole Numbers<br><br>Section 3.3: Subtraction of Whole Numbers | (Initial Due)<br>Section 3.2-2nd<br>Section 3.2-3rd<br>Section 3.3-1st<br><br>DB 3 (Due) |
| 4 | Sunday, 09/03<br>–<br>Saturday, 09/09 | Section 3.3: Subtraction of Whole Numbers<br><br>Section 3.4: Multiplication of Whole Numbers | (Initial Due)<br>Section 3.3-2nd<br>Section 3.3-3rd<br>Section 3.4-1st<br><br>DB 4 (Due) |

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| Monday / September 4 (09/04) | | Labor Day | |
| 5 | Sunday, 09/10 – Saturday, 09/16 | Section 3.4: Multiplication of Whole Numbers<br><br>Section 3.5: Division of Whole Numbers | (Initial Due)<br>Section 3.4-2nd<br>Section 3.4-3rd<br>Section 3.5-1st<br><br>DB 5 (Due) |
| 6 | Sunday, 09/17 – Saturday, 09/23 | Section 3.5: Division of Whole Numbers<br><br>Section 4.1: Divisibility | (Initial Due)<br>Section 3.5-2nd<br>Section 4.1-1st<br>Section 4.1-2nd<br><br>DB 6 (Due) |
| 7 | Sunday, 09/24 – Saturday, 09/30 | Section 4.2: Prime and Composite Numbers<br><br>Section 4.3: Greatest Common Divisor and Least Common Multiple | Section 4.2-1st<br>Section 4.2-2nd<br>Section 4.3-1st<br><br>DB 7 (Due) |
| 8 | Sunday, 10/01 – Saturday, 10/07 | Section 4.3: Greatest Common Divisor and Least Common Multiple<br><br>Section 5.1: Addition and Subtraction of Integers | (Initial Due)<br>Section 4.3-2nd<br>Section 5.1-1st<br>Section 5.1-2nd<br>Section 5.1-3rd<br><br>DB 8 (Due) |
| 9 | Sunday, 10/08 – Saturday, 10/14 | Section 5.2: Multiplication and Division of Integers<br><br>Number Theory: Modular Arithmetic Application: ISBN | (Initial Due)<br>Section 5.2-1st<br>Section 5.2-2nd<br>Section 5.2-3rd<br>Project (Draft): Number Theory<br><br>DB 9 (Due) |
| 10 | Sunday, 10/15 – Saturday, 10/21 | Section 6.1: The Set of Rational Numbers | (Initial Due)<br>Section 6.1-1st<br>Section 6.1-2nd<br>Section 6.1-3rd<br>Project: Number Theory<br><br>DB 10 (Due) |
| 11 | Sunday, 10/22 | Section 6.2: Addition, Subtraction, and | (Initial Due) |

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|---|---|---|---|
| | – Saturday, 10/28 | Estimation with Rational Numbers<br><br>Section 6.3: Multiplication, Division, and Estimation with Rational Numbers | Section 6.2-1st<br>Section 6.2-2nd<br>Section 6.3-1st<br><br>DB 11 (Due) |
| Friday / October 27 (10/27) | | Last day to Withdraw with a Grade of "W" | |
| 12 | Sunday, 10/29 – Saturday, 11/04 | Section 6.3: Multiplication, Division, and Estimation with Rational Numbers<br><br>Section 6.4: Proportional Reasoning | (Initial Due)<br>Section 6.3-2nd<br>Section 6.3-3rd<br>Section 6.4-1st<br>Section 6.4-2nd<br><br>DB 12 (Due) |
| 13 | Sunday, 11/05 – Saturday, 11/11 | Section 6.4: Proportional Reasoning<br><br>Section 7.1: Terminating Decimals<br><br>Section 7.2: Operations on Decimals | (Initial Due)<br>Section 6.4-3rd<br>Section 7.1-1st<br>Section 7.1-2nd<br>Section 7.2-1st<br><br>DB 13 (Due) |
| 14 | Sunday, 11/12 – Saturday, 11/18 | Section 7.2: Operations on Decimals<br><br>Section 7.3: Repeating Decimals | (Initial Due)<br>Section 7.2-2nd<br>Section 7.2-3rd<br>Section 7.3-1st<br>Section 7.3-2nd<br><br>DB 14 (Due) |
| 15 | Sunday, 11/19 – Saturday, 11/25 | HAPPY THANKSGIVING | (Final Due)<br>Project Draft |
| 16 | Sunday, 11/26 – Saturday, 12/02 | Section 7.4: Percents<br><br>Section 7.5: Real Numbers | (Initial Due)<br>Section 7.4-1st<br>Section 7.4-2nd<br>Section 7.4-3rd<br>Section 7.5-1st<br>Section 7.5-2nd<br><br>DB 15 (Due) |
| (Final Due)<br>Number Theory Project: Thursday, 12/07; 11:59 pm MDT<br><br>All MyLab Math (MLM) Assignments: Thursday, 12/07; 11:59 pm MDT | | | |